Orthogenetic saltation.—BENEDICT[14] has undertaken a study of the variations of the Boston fern (*Nephrolepis exaltata bostoniensis*). His title is selected to emphasize two points: (1) the variations are discontinuous (saltation), and (2) they occur in a definite series along a few limited lines (orthogenetic). It seems that from this fern there have arisen more than 100 forms in less than 15 years. The present paper is concerned chiefly with a record of the facts. Uniform and highly developed cultural conditions are thought to favor the preservation of variations which under wild conditions would be eliminated.

The variations are classified as progressive and regressive, implying in the one case increasing departure from the parent form and in the other case a return toward the parent form. Progressive variations have appeared along three main lines: (1) increasing division of the leaf, observed through 5 vegetative generations; (2) increasing ruffling of the pinnae, observed through 3 generations; and (3) dwarfing, observed through 3 generations. Regressive variations rarely if ever show a complete return to the parent form. The coefficient of variation for progressive variations is very low, probably between 1:1,000,000 and 1:1,000; while regressive variation is much more common. The variations are all discontinuous and the differences are said to be as great as those existing between many wild species of ferns. The main difference between these variations and those shown by wild forms is that the former do not survive natural conditions, the variation usually being accompanied by diminished vigor.—J. M. C.

Anomalous endosperm and the problem of bud sports.—EMERSON[15] has recorded some new and interesting cases of hybrid maize kernels in which half of the endosperm shows a different combination of Mendelian characters from the other half, although it is obvious, from the fact that both parts show xenia, that the endosperm as a whole is due to double fertilization. He discusses two hypotheses, either of which might account for such kernels, namely, EAST and HAYES' hypothesis of somatic segregation and his own hypothesis of somatic mutation. A third, suggested years ago by COULTER and CHAMBERLAIN, seems to the reviewer more plausible than either. In certain plants it has been observed that the division of the primary endosperm nucleus begins before the constituent nuclei have lost their identity. If such a condition were to be demonstrated in maize, we would have a mechanism for the production of mosaic endosperm which could be called neither segregation nor mutation, in the sense in which EMERSON obviously uses the latter term

[14] BENEDICT, R. C., The origin of new varieties of *Nephrolepis* by orthogenetic saltation. I. Progressive variations. Bull. Torr. Bot. Club **43**:207–234. *pls. 10–15.* 1916.

[15] EMERSON, R. A., Anomalous endosperm development in maize and the problem of bud sports. Zeitschr. Ind. Abstamm. u. Vererb. **14**:241–259. 1915.